

What is claimed is:

1. A sound insulation/absorption structure having a film member such as a polymer film and a metal foil, characterized in that the film member is formed into a curved shape such as a dome, a barrel, and a cone, the periphery of this curved shape is fixed to another structure, and the resonance frequency of the curved shape in the in-plane stretching is set at a frequency equal to or higher than the audible frequency band to insulate or absorb sound by the elastic force of the film.
2. A sound insulation/absorption structure comprising a film member, such as a polymer film and a metal foil, and a frame body having at least one opening of a lattice, honeycomb or annular shape, characterized in that the film member is fixed to the frame body, the section of the film member surrounded by the frame body is formed into a curved shape such as a dome, a barrel, and a cone, and the resonance frequency of the curved shape in the in-plane stretching is set at a frequency equal to or higher than the audible frequency band to insulate or absorb sound by the elastic force of the film.
3. The sound insulation/absorption structure according to claim 1 or claim 2, wherein a holding means is provided to hold the film member in the curved shape.
4. The sound insulation/absorption structure according to claim 1 or claim 2, wherein a tensile force is applied to the film member.
5. The sound insulation/absorption structure according to claim 1 or claim 2, wherein the film member is replaced by a plate member, such as a plastic plate, a metal plate, and a veneer board, molded into a curved shape such as a dome, a barrel, and a cone.
6. A sound insulation/absorption structure comprising a film member, a frame body, an elastic body, and a supporting plate, characterized in that the elastic body and the film member

are put on the supporting plate to be pressed with the frame body so that the elastic body and the film member are held between the frame body and the supporting plate to apply a tensile force to the film member, the film member is formed into a curved shape such as a dome, and the resonance frequency of the curved shape in the in-plane stretching is set at a frequency equal to or higher than the audible frequency band to insulate or absorb sound by the elastic force of the film.

7. A sound insulation/absorption structure comprising two film members, a frame body, and an elastic body, characterized in that the elastic body is placed between the two film members, the elastic body and the two film members are held between the frame body to apply a tensile force to the two film members, the two film members are respectively formed into a curved shape, and the resonance frequency of the curved shape in the in-plane stretching is set at a frequency equal to or higher than the audible frequency band to insulate or absorb sound by the elastic force of the film.

8. The sound insulation/absorption structure according to any one of claims 1 through 7, wherein the film member formed into a curved shape or the plate member formed into a curved shape is set in a one-dimensional or two-dimensional array.

9. The sound insulation/absorption structure according to any one of claims 1 through 8, wherein the surface density, elastic constant, outer peripheral dimensions, and curvature radius of the curved section of the film member or the plate member are set so that the resonance frequency of the in-plane stretching vibration is within or higher than the audible frequency band.

10. The sound insulation/absorption structure according to any one of claims 2 through 9, wherein the film member or the plate member and the frame body securing these are integrally

formed.

11. A sound insulation/absorption device characterized in that the film member or the plate member constituting the sound insulation/absorption structure according to any one of claims 1 through 10 is provided with a piezoelectric member, and a circuit presenting a negative capacitance is connected to this piezoelectric member.

12. The sound insulation/absorption device characterized in that the film member or the plate member constituting the sound insulation/absorption structure according to any one of claims 1 through 10 is a member with piezoelectric characteristics, and a circuit presenting a negative capacitance is connected to this member.

13. A structure having the sound insulation/absorption structure according to any one of claims 1 through 10 applied thereto, characterized in that the sound insulation/absorption structure is applied to structures such as an automobile, a vehicle such as an electric train, an aircraft, a marine vessel and other transport equipment (vehicle), a panel, a partition and other building material, a sound insulation wall, a sound-proof wall, a building structure, a chamber, electric equipment, a machine, and acoustic equipment to insulate or absorb sound.

14. A member constituting the structure having the sound insulation/absorption structure according to any one of claims 1 through 10 applied thereto, characterized in that the sound insulation/absorption structure is applied to a member constituting the structure such as an automobile, a vehicle such as an electric train, an aircraft, a marine vessel and other transport equipment (vehicle), a panel, a partition and other building material, a sound insulation wall, a sound-proof wall, a building structure, a chamber, electric equipment, a machine, and acoustic equipment to insulate or absorb sound.

15. A structure having the sound insulation/absorption device according to claim 11 or

claim 12 applied thereto, characterized in that the sound insulation/absorption device is applied to the structure such as an automobile, a vehicle such as an electric train, an aircraft, a marine vessel and other transport equipment (vehicle), a panel, a partition and other building material, a sound insulation wall, a sound-proof wall, a building structure, a chamber, electric equipment, a machine, and acoustic equipment to insulate or absorb sound.

16. A member constituting the structure having the sound insulation/absorption device according to claim 11 or claim 12 applied thereto, characterized in that the sound insulation/absorption device is applied to the member constituting the structure such as an automobile, a vehicle such as an electric train, an aircraft, a marine vessel and other transport equipment (vehicle), a panel, a partition and other building material, a sound insulation wall, a sound-proof wall, a building structure, a chamber, electric equipment, a machine, and acoustic equipment to insulate or absorb sound.